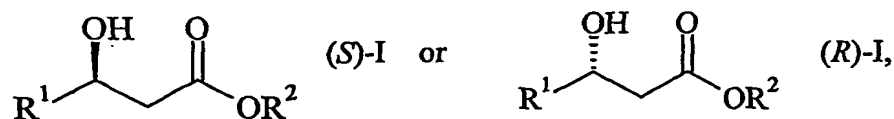


Claims

1. Process for the preparation of enantiomerically pure (*S*)- or (*R*)-4-halo-3-hydroxybutyrates of formula



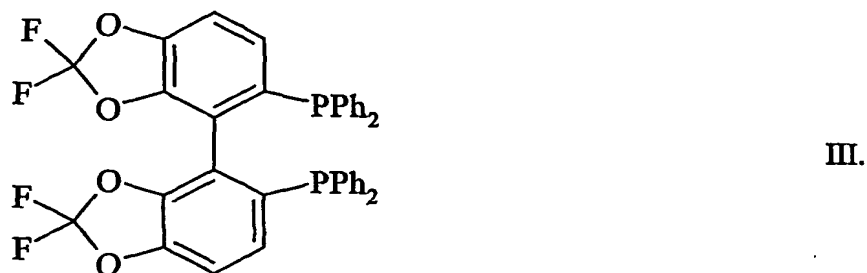
wherein R^1 is CH_2X , CHX_2 or CX_3 and X independently represents Cl and/or Br and wherein R^2 is C_{1-6} -alkyl, C_{3-6} -cycloalkyl, aryl or aralkyl, each aryl or aralkyl being optionally further substituted with one or more C_{1-4} -alkyl groups and/or halogen atoms,

which process comprises the asymmetric hydrogenation of 4-halo-3-oxobutyates of formula



wherein R^1 , R^2 and X are as defined above

in the presence of a catalyst of a ruthenium complex comprising a chiral ligand of formula



2. The process of claim 1, wherein the ruthenium complex comprising a ligand of formula III comprises at least one diene, alkene or arene or polar solvent molecule as stabilizing ligand.
3. The process of claim 1 or 2, wherein the ruthenium complex comprising a ligand of formula III comprises at least one molecule of 1,5-cyclooctadiene or *p*-cymene as stabilizing ligand.

4. The process of one of claims 1 to 3, wherein the hydrogenation is carried out in a solution comprising a polar solvent selected from the group consisting of *C*₁₋₄-alcohols, dimethylsulfoxide, dimethylformamide, acetonitrile and mixtures thereof, wherein the solvent optionally contains further solvent additives.
5. The process of any one of claims 1 to 4, wherein the counterion of the ruthenium complex is selected from the group consisting of Cl⁻, Br⁻, I⁻, BF₄⁻, AsF₆⁻, SbF₆⁻, PF₆⁻, ClO₄⁻ and OTf⁻.
6. The process of any one of claims 1 to 5, wherein the ruthenium complex is prepared by mixing the complex of formula [Ru₂Cl₄(cym)₂] with the Fluoxphos ligand in a polar solvent.
7. The process of any of claims 1 to 6, wherein the hydrogen pressure during the reaction is in the range of 1 to 60 bar and preferably in the range of 2 to 35 bar.